

Quality Assurance at Bently Nevada



by Lorri Williams

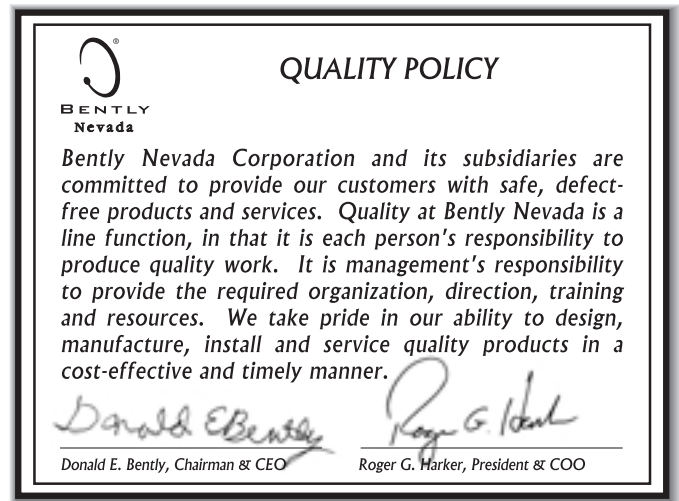
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It was not long ago that most manufacturing companies practiced “quality control” – a culture of always inspecting and checking to make sure everyone was doing his/her job. That culture has long since passed at Bently Nevada Corporation. In the 1970s and 1980s, Bently Nevada had a very large and task-oriented Quality Control organization. In the 1990s and continuing through today, the quality focus has changed from one of “control” to one of “assurance.”

Bently Nevada shifted away from in-process inspection and expanded its quality focus to include design, manufacturability, and service. The changes integrated quality into each of the processes, utilized defined checkpoints, and made sure the products and services provided have the foundation to meet the stringent quality expectations of our customers (both internal and external). The focus and development of these changes has been shared by the Quality Assurance organization as well as the company’s other organizations. As a result, quality has become a line function of the overall operating methodologies and strategies within the company.

Our pursuit of ISO 9000 Certification in the early 1990s provided an opportune test of our recently changed quality system. Bently Nevada sought to certify each of our design and manufacturing operations. Through a total company effort, our Minden, Nevada, and Houston, Texas, sites in the U.S., and our Warrington, England, site, were all certified to ISO 9001 by 1993. In addition, our Bently Nevada Australia office was certified to ISO 9001 in 1995. We have continued to maintain the certifications in each of these locations.

We have been successful in our quality efforts for many reasons, among them the unwavering support of top



management and the overall commitment of employees. The support starts at the top and is well documented by our Quality Policy, a policy that hangs in prominent locations throughout our facilities.

Quality Assurance is presently comprised of 21 employees, including engineers, technicians, and administrative personnel, who work together with Manufacturing, Design, Sales and Service. The typical Quality Engineer has a degree in engineering and between 3 and 20 years experience in a manufacturing/design environment. These engineers are active members in the American Society for Quality (ASQ), and the majority of them hold one or more certifications through ASQ (i.e., Certified Quality Engineer, Certified Reliability Engineer, or Certified Quality Auditor). It is the strength and depth of these key employees that helps us to design quality into our products and processes.

Quality is integrated into the design early in the process. Doing so strengthens the likelihood that the released product will meet and continue to meet the product requirements and specifications. To accomplish this, a team of skilled Quality Technicians works together with Engineering to test and evaluate new products before and after release to production. These technicians maintain an extensive Engineering lab,

which utilizes both new and existing Bently Nevada products. Progressive testing and evaluation techniques are employed to verify the functionality and compatibility of our new products with our existing products. During these tests, we evaluate the product's ability to meet (and exceed) the design specifications and operating requirements. This testing also identifies areas that may meet the established requirements, but could be improved upon in current or future designs.

One of the main tools used by Quality Assurance, and other departments, is our problem solving methodology. In the early 1990s, we adopted a nine-step problem solving process that revolves around basic quality tools and techniques. This process has been used successfully many times, addressing both internal and external quality issues. The nine steps are:

1. Recognize Expectations (that are not being met)
2. Prioritize
3. Identify Champion
4. Describe the Problem in Detail
5. Short-Term Corrective Action
6. Define and Verify the Fundamental Cause
7. Choose Long-Term Corrective Action
8. Implement Long-Term Corrective Action
9. Prevent Recurrence

To illustrate, we had a situation involving pitting and excess porosity on our 3300 Proximitor® cases. The cases are a purchased part and are manufactured using a metal casting process. A group of 12 employees of varying disciplines and one facilitator was able to use the problem solving process to determine the fundamental cause and corrective action. The problem was random in nature, with no apparent patterns or trends. After going through the data gathering and analysis of the problem, it was evident that the fundamental cause was with the mold used to make the parts. The problem was related to two cavities in a four-cavity mold. The mold was manufactured to Bently Nevada specifications, but had been reconstructed over time to ensure continued quality of parts. Unfortunately, the reconstruction was performed to our assembly drawings, not to the actual component-level part drawings. As such, a portion of the mold (two cavities) did not allow adequate wall thickness of the cast material, thus

allowing pits, cracks, and other cosmetic anomalies to occur. The immediate corrective action was to reconstruct the mold to the appropriate dimensions. The long-term corrective action was to review all of our other molds and their drawings to assure the same problems were not occurring elsewhere. Preventing the recurrence of problems is vitally important.

Have you ever been dissatisfied with the quality/performance of a product? We have a comprehensive complaint and quality reporting process that allows all of our personnel, as well as our customers, to report quality issues whether they are good or bad. Once reported, the problem solving process is used, and appropriate feedback and responses are provided to the originator (if requested). There is even a form on our website (www.bently.com) for submitting quality issues directly to Bently Nevada's Quality Assurance Manager. The input is highly valued, and the information we gain is directly used to make our products and processes even better.

Bently Nevada boasts a comprehensive repair and failure analysis process. We consider each returned product an opportunity to learn and improve. When a product is returned, the nature of the problem and failure mode will dictate the level of analysis performed on that product. For example, our Proximitor® sensors, probes, and cables are not typically considered repairable items. Each one of these products, when returned, is analyzed in our transducer failure analysis lab to make sure we understand the cause of failure and what needs to be done to prevent it from happening again. The information gained from this analysis is then used to improve our new and existing products. It is also used to help us improve our external documentation to ensure that our products are installed and used in a manner that will guarantee continued and lasting use.

Our company-wide quality "assurance" attitude allows Bently Nevada to offer a 3-year service plan on all of our hardware products. This service plan is provided at no additional cost and is available for all of our customers, regardless of their geographical location.

As the concluding line in our Quality Policy states: "We take pride in our ability to design, manufacture, install and service our products in a cost-effective and timely manner." We believe this commitment will continue to keep Bently Nevada on the top of your list as a supplier of high quality products and services that continue to provide lasting value. 